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recent publication,[8] the joint product of a botanist and a forester. The former seems to have contributed many details concerning the floristic and ecological composition of the many variations in the dipterocarp forest. The quantitative data regarding the physical climatic factors are among the first to be collected in tropical forests according to modern methods. Soil moisture determinations for every month in the year, although unfortunately not accompanied by the wilting coefficient of the soil, show that the soil is quite uniformly moist throughout the year. Atmometer records throughout the year give for the first time the data for an adequate comparison with the evaporating power of the air in mesophytic forests elsewhere. In the dipterocarp forests of Mount Maquiling the maximum, minimum, and average daily rates of evaporation upon the floor of the forest are respectively 5.3, 0.7, and 2.5 cc., as compared with 10.6, 3.3, and 7.1 cc. obtained by the reviewer[9] in the mesophytic beech-maple forest of northern Indiana. The evaporation data are especially good because they are given not only for the floor of the forest but also for the second story trees, where there is protection by the general canopy of foliage, and give a maximum, minimum, and average daily rate of 7.5, 1.8, and 5.3 cc. respectively, and for the atmosphere above the tree tops, where the maximum, minimum, and average daily rates are 22.1, 8.4, and 15.7 cc. The leaves of the tree tops are thus exposed to an evaporating power of the air 6 times as great as that obtaining for the ground vegetation.

The forester's part of the report contains many data of the distribution, composition, volume, and rate of increment of these forests. The results show that they may, when cut and logged by modern methods, make a very important contribution to the lumber supply of the world. In this connection it is interesting to note that the average rates of growth of the dipterocarps are about the same as those of the hardwoods in the central deciduous forest region of the United States; while one of the most rapid growers, *Parashorea plicata*, appears to grow about twice as fast as *Liriodendron*. The relative advantages of various cutting systems are discussed, and the opinion expressed that planting of dipterocarps is not likely to be successful.

This article, together with the earlier reports of WHITFORD, gives a good general ecological knowledge of these interesting forests, and should furnish a good basis for the rapid evolution of methods of forestry which will render these natural resources a permanent source of wealth for these islands.—GEO. D. FULLER.

Distribution of species.—WILLIS in two recent papers[10] attempted to show that the geographical distribution of species within Ceylon is to be explained, not by natural selection, but by the relative local age of each species, basing his argument upon statistics. In accordance with his theory he made a number of predictions as to the distribution of species in New Zealand. These predictions have been verified by statistics which he has collected there, and which he presents in his latest paper, furnishing a very striking verification of his theory.[11]

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[8] BROWN, W. H., and MATHEWS, D. M., Philippine dipterocarp forests. Phil. Jour. Sci. Sect. A. **9**:413–561. *figs. 16.* 1914.

[9] BOT. GAZ. **58**:193–234. 1914.

[10] Rev. in BOT. GAZ. **61**:82. 1916; **62**:160. 1916.

Supposing a given species to have entered the islands at a certain point, and spread at an even rate, the area of its distribution at any time would be a measure of its local age. It is reasonable to suppose that this species would give rise to endemics, in increasing number as time went on, and as the area occupied became greater. At the limits of the islands farthest from the point where the species entered, the local age of the species, and consequently the number of endemics to which it had given rise, would be least. Following out such a conception, WILLIS predicted that the middle zones of the islands should show a greater number of endemics than the outer zones, and this proved to be the case.

Following the same line of thought, those endemics which were produced early would have most nearly reached the limits of the islands in their distribution, while those produced later in the local history of the parent species would be more limited in their distribution to the middle zones of the islands. Consequently, the author predicted that "the range of an endemic species would on the average be greater the nearer that one of its limits was to either end of the islands." This also was verified.

Another prediction made and verified was that widely distributed species would be more widespread within the islands than endemics, as in the case of Ceylon. On the basis that the land connection with New Zealand both ended earlier and began earlier than that with Ceylon, the author predicted that the average area occupied by a species in New Zealand would be greater than in Ceylon, that is, that both "wides" and endemics would be comparatively fewer in the lower or earlier stages in the scale. These predictions also were verified.

Those who wish to examine the exact mathematical statement of the author's method and conclusions are referred to the paper.—MERLE C. COULTER.

A floating reed swamp.—Occurring in the delta of the Danube River is a remarkable form of floating swamp formed by the reed *Phragmites communis* var. *flavescens* Gren. and Godr. It has been described by Miss PALLIS,[12] who visited and studied it in 1912 and again in 1913. She found that this swamp, known as Plav, differs from a closed reed swamp chiefly in the fact that it floats, the surface of the mat of soil and vegetation remaining constantly about

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[11] WILLIS, J. C., The distribution of species in New Zealand. Ann. Botany **30**: 4-457. *fig. 1.* 1916.

[12] PALLIS, MARIETTA, The structure and history of Plav, the floating fen of the delta of the Danube. Jour. Linn. Soc. **43**:233-290. *pls. 11-25.* 1916.